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PACIFIC OCEANIC FISHERY
INVESTIGATIONS

FISHES OF HAWAII, JOHNSTON ISLAND, AND WAKE ISLAND

BY

HENRY W. FOWLER

AND

STANLEY C. BALL

BERNICE P. BISHOP MUSEUM
BULLETIN 26

TANAGER EXPEDITION PUBLICATION No. 2

HONOLULU, HAWAII
PUBLISHED BY THE MUSEUM
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Fishes of Hawaii, Johnston Island, and Wake Island

By

Henry W. Fowler

And

Stanley C. Ball

The collections reported in this paper were taken during the spring and summer of 1923 at the islands of the Hawaiian group west of Kauai embracing Nihoa, Necker, French Frigate Shoals, Gardner, Laysan, Lisiansky, Pearl and Hermes Reef, Midway and Ocean islands, and at Johnston and Wake islands to the southwest. They were obtained by Mr. Ball and Major Chapman Grant with the aid of other members of the party.[1]

More time was spent at Laysan than elsewhere, and there an attempt was made to obtain a complete set of fishes. Of the species seen in a month's effort four-fifths are represented in the collections. In four days at Lisiansky, the next island westward, a few were seen which had not been noted at Laysan. Having then the services of John Baker, a Hawaiian fisherman, two parrot fishes seen but not obtained at Laysan were added to the collection. The only species seen at Lisiansky but not caught, was a yellow one with oblique dark bands. The observer, Major Chapman Grant, believes it to have been *Cheilodactylus vittatus* Garrett.

Laysan is but poorly protected, the fringing reef being frequently interrupted so as to allow the heavy swells to pound the reef and shore whenever the wind is fresh. No doubt this accounts for the paucity of small reef species. The water glass failed to reveal these forms swimming about the coral heads, and even breaking up the coral yielded almost nothing but crustaceans and worms.

At Lisiansky, a reef two or three miles off shore protects a large area between it and the sandy island. The island has few of the sandstone ledges along shore, such as were found at Laysan. Its sandy margins and bays supported myriads of a relatively small number of species. Whereas at Laysan not over fifty mullet were seen and fewer Neomyxus, one small

[1] Gregory, H. E., Report of the Director for 1923: B. P. Bishop Mus. Bull. 10, pp. 19-24, 1924.

school of Polydactylus and a few thousand Kuhlia, these species were represented at Lisiansky by millions. Shoals of Mugil and Polydactylus several square rods in extent were often seen. Of these the specimens listed here are preserved in the Bishop Museum, and a set of the duplicates has been sent to the Academy of Natural Sciences of Philadelphia. The color notes, unless otherwise stated are from the specimens in alcohol.

The greater number of species listed constitute new locality records, while four are new species and two are new genera. We have previously described one new genus as the type of a new family, also a new species of a genus new to Oceania. Equally important is the rediscovery of the little known *Bleekeria gillii*.[2]

EULAMIIDAE

Galeocerdo arcticus (Faber).

Tooth picked up on beach of east shore of Laysan Island, May 5, entire jaw from specimen caught at Nihoa, May 24. About six in two months caught at Laysan and Nihoa, probably others by sailors at night. Several also caught at Lisiansky and Gardner islands. Not previously recorded from these islands.

Eulamia commersonii (Blainville).

Common at all islands west of Kauai. One from Laysan 1015 mm. long, where always found outside reef. Eight young were taken from a female 2440 mm. long at Nihoa, May 24. Of these one examined measured 487 mm. Pieces of jaws and teeth from an example taken at Gardner Island probably this species. One from Wake Island, 495 mm.

GALEORHINIDAE

Triaenodon obesus (Rüppell).

Two from Laysan 1035 and 1488 mm. long, taken in April. Common at Laysan, Lisiansky, and Wake, many always in pools and channels of the shore reef. Not met with at Gardner or Nihoa which lack reef. An interesting addition to the Hawaiian ichthyfauna. Easily known by its obtuse snout and white-tipped dorsals and caudal. In the hundred or more specimens seen, the size was remarkably uniform. The variation was not more than 20 cm. Not a single young one was seen. A striking associa-

[2] Fowler, H. W., and Ball, S. C., Descriptions of new fishes obtained by the Tanager Expedition of 1923 in the Pacific Islands west of Hawaii: Acad. Nat. Sci. Phila., Proc. vol. 76, pp. 269-274, 1924.

tion was noted between this species and large specimens of Caranx, one or more of which often accompanied schools of half a dozen sharks.[3]

MYLIOBATIDAE

Aetobatus narinari (Euphrasen).

One from Johnston Island, 240 mm. in length to caudal base.

ALBULIDAE

Albula vulpes (Linné).

Head 177 mm. of an example from Lisiansky in May. None seen at Laysan, common at Lisiansky. Many caught with cast net close to beach in shallow sandy bays which they frequent in small groups. They show little fear of man in this isolated region.

CLUPEIDAE

Etrumeus micropus (Schlegel).

Seven from off Lisiansky, May 19. Length 61 to 63 mm.

Stolephorus delicatulus (Bennett).

Five examples, 70 to 78 mm., from off Lisiansky, May 19.

CONGRIDAE

Atopeichthys sp.

Head, 13¾; depth, 12 2/3; myomeres 130 (?), last on caudal base indistinct; snout, 4½ in head measured from upper jaw tip; eye, 4½; mouth cleft, 2 4/5; interorbital, 5; pectoral, 3 1/3 in total head length. Body strongly compressed, deep, more tapering forward, so greatest depth at last third. Lower jaw protruding. Color in alcohol pale uniform brownish. Iris yellowish, apparently silvered. Length 165 mm. One from Pearl and Hermes Reef, May 17.

ECHELIDAE

Muraenichthys schultzei Bleeker.

Twelve from Johnston Island in July, at night, 73 to 100 mm.

OPHICHTHYIDAE

Myrichthys colubrinus (Boddaert).

Twelve from Johnston Island, 315 to 382 mm., in July. Dark rings not closed ventrally.

[3] In this connection we may call attention to the record of *Echinorhinus brucus* by Fowler, B. P. Bishop Mus. Occ. Pap. 8, No. 7, p. 375, 1923. It is based on two examples in the Bishop Museum which we find on subsequent examination certainly to be *Isistius brasiliensis* (Quoy and Gaimard).

Myrichthys maculosus (Cuvier).

One from Johnston Island, 389 mm., in July. Agrees with Jordan and Evermann's figure of the type of *Myrichthys stypurus*.

Leiuranus semicinctus (Lay and Bennett).

Three from Johnston Island, 222 to 257 mm., in July.

Ophichthys calamus Günther.

One from Lahaina, Maui, in June, 130 mm. long.

ECHIDNIDAE

Echidna polyzona (Richardson).

One from French Frigate Shoals, 183 mm.

Lycodontis picta (Ahl).

Two from Johnston Island and three from Wake Island, 558 to 940 mm.

Lycodontis meleagris (Shaw and Nodder).

Five from Laysan, four from French Frigate Shoals, one from Lisiansky, one from Ocean Island, and two from Johnston Island. Length 98 to 584 mm.

Lycodontis petelli (Bleeker).

One from Wake Island, in July, 135 mm. long. This interesting example is largely in agreement with *Gymnothorax waialuae* Snyder, the type of which we have examined in the United States National Museum. Our specimen varies, however, in the black blotches and rings, as on the head and trunk all are disconnected along the middle line of the belly. Black blotches 21.

Lycodontis flavomarginata (Rüppell).

One from Laysan, 1220 mm.

One from Wake Island, 890 mm. Ground color nearly vandyke-brown, marked with dusky to blackish, some of markings more or less complete circles along back and on tail. Edges of both dorsal and anal black. Gill-opening in large black blotch. Corner of mouth dusky.

Lycodontis kidako (Schlegel).

One from Necker, one from French Frigate Shoals and one from Laysan reef, May 6. Length 445 to 535 mm.

Lycodontis undulata (Lacépède).

One from French Frigate Shoals, in June, 160 mm. Throat uniformly pale. Two from Wake Island, in July, 120 to 135 mm.

Uropterygius concolor Rüppell.

One from French Frigate Shoals, 180 mm.

Uropterygius marmoratus (Lacépède).

One from French Frigate Shoals, 520 mm. Head 11¼ in total; combined head and trunk 1½ in tail. Deep brown, mottled with dusky to blackish. Under surface dull brown, obscurely blotched with darker.

SYNODONTIDAE

Trachinocephalus myops (Schneider).

Two from Lahaina, Maui, both 42 mm. Anal with 14 rays. Although not obtained on the Expedition this specimen is here recorded. It was taken shortly afterward by a member of the *Tanager's* crew.

Synodus japonicus (Houttuyn).

One from French Frigate Shoals, June, 1923. Length 250 mm.

MYCTOPHIDAE

Dasyscopelus spinosus (Steindachner).

Four from Wake Island in July, 38 to 126 mm.

Myctophum affine (Lütken).

Head, 3¼; depth, 4 2/5; D. II, 10; A. II, 16; snout, 6 2/3 in head; eye, 2¾; maxillary, 1 2/5; interorbital, 3 1/5. Photophores as three mandibulars; one behind end of maxillary; opercular larger and close behind preopercle ridge; three pectorals, of which uppermost humeral, one at pectoral base and lowest on edge of gill-opening; two anterolaterals, of which uppermost over middle of depressed pectoral; three mediolaterals; one posterolateral; one caudal (left, but two on right side); five thoracic; three ventrals; six plus four anals. Few remaining scales with violet and steel-blue reflections. Length 50 mm. One from Pearl and Hermes Reef in May.

BELONIDAE

Belone platyura Bennett.

Four from Laysan, in April, 414 to 495 mm. Seen only at night. Common at Laysan and Lisiansky. Easily attracted to a light on the reef. Head 140 mm., of dried example from Ocean Island probably this species.

HEMIRAMPHIDAE

Hemiramphus brasiliensis (Linné).

One from off Lisiansky, May 19, 418 mm.

EXOCOETIDAE

Parexocoetus brachypterus (Richardson).

One from off Lahaina, Maui, in June, 102 mm.

Evolantia microptera (Valenciennes).

Two larval examples, about 7 mm. long may be this species, from the surface at Laysan, April 12.

Exocoetus volitans Linné.

Twelve from under cargo light off Wake Island, August 4, in 300 fathoms. Length 50 to 96 mm.

One example came aboard *U. S. S. Tanager,* July 24, at 180th meridian. Length 55 mm.

Cypselurus oxycephalus (Bleeker).

One from off Laysan, 42 mm. long. First pectoral ray longer than second or third, though third longer than second.

Cypselurus rondeletii (Valenciennes).

One came aboard *Tanager* July 24 at 180th meridian. Length 78 mm. D. 11; A. 12. Also five from Laysan, 43 to 71 mm. The smaller ones are much paler, have greater portion of the paired fins white basally, only outer pectoral edge and ends of ventrals black, also dorsal only with small black spot on posterior half of fin.

Cypselurus rubescens (Rafinesque).

Four from off Lisiansky on May 19, 295 to 508 mm., 2 from off Laysan May 11, 293 to 295 mm. Abundant at Lisiansky, Laysan and Gardner.

Cypselurus poecilopterus (Valenciennes).

Two from Johnston Island, 320 to 338 mm. D. 1, 11 to 1, 13; A. 1, 8. Dorsal without black spot of *Cypselurus atrisignis* Jenkins.

Cypselurus bahiensis (Ranzani).

One from Lisiansky, 394 mm., May 14. D. 1, 12; A. 1, 10; pectoral not quite reaching far back as tip of last depressed dorsal ray. Dorsal with upper large marginal black blotch from second to eighth branched ray inclusive. Anal white. Pectoral largely deep sienna-brown or dusky,

outer faces of rays silvered. Ventral white with slight neutral axillary streak.

Cypselurus simus (Valenciennes).

One from off Lahaina, Maui, taken by sailors on *Tanager* in June, 46 mm. D. 1, 11; A. 1, 6. Barbel long as combined eye and snout. Color largely pale brownish to whitish below. Trunk with 6 broad dusky-brown cross-bands. Opercle similar. Black blotch broadly at base of each barbel externally. Dorsal pale, except broad dark bands reflected basally. Anal whitish. Pectoral whitish, with 3 blackish cross-bands. Ventral similar. Caudal whitish.

One from Johnston Island, 358 mm. D. 1, 12; A. 1, 10. Pectoral not reaching far as base of last dorsal ray (right one shorter, not reaching beyond middle of dorsal fin). Dorsal, anal and pectoral pale.

BOTHIDAE

Platophrys mancus (Broussonet).

Three from Johnston Island, 200 to 378 mm. A. 80.

Two from Wake Island, 133 to 324 mm. A. 73 to 76.

HOLOCENTRIDAE

Holocentrus erythraeus Günther.

Two from Wake Island, 275 mm. Scales 47 in lateral line to caudal base.

Holocentrus lacteoguttatus Cuvier.

Two from Laysan, where common on reef at night. Five from Johnston Island and five from Wake Island. Those of Wake Island all dusted with deep brown dots or specks on head and trunk. Length 68 to 117 mm.

Holocentrus diadema Lacépède.

Three from French Frigate Shoals, 125 to 194 mm.

Holocentrus microstomus Günther.

Two from Johnston Island and one from Wake Island, 106 to 203 mm.

Holocentrus spinifer (Forskål).

Six from Johnston Island and two from Wake Island, 195 to 365 mm.

Holocentrus sammara (Forskål).

Three from French Frigate Shoals and three from Wake Island, 160 to 227 mm.

Holocentrus opercularis Valenciennes.

Two from Wake Island, one 280 mm.

Myripristis murdjan (Forskål).

Three from French Frigate Shoals, one from Johnston Island and one from Wake Island, 140 to 270 mm. Seen only at night on the protected reef.

Myripristis praslinus Cuvier.

One from French Frigate Shoals, June. Length 177 mm.

SYNGNATHIDAE

Corythoichthys conspicillatus (Jenyns).

Three from Wake Island in July, 61 to 75 mm. These agree with the figure of *Corythroichthys sealei* Jordan and Seale.

Hippocampus kuda Bleeker.

Two from Necker Island, in July, about 53 mm. long.

AULOSTOMIDAE

Aulostomus chinensis (Linné).

Two from French Frigate Shoals, one from Lisiansky shore-reef in May, and one from Wake Island. Length 487 to 720 mm. Several seen at Laysan in five fathom pools near outer edge of reef. Although not easily frightened, refused all bait.

FISTULARIIDAE

Fistularia petimba Lacépède.

One from French Frigate Shoals in June, 1010 mm., one from Johnston Island in July, 830 mm.

ATHERINIDAE

Hepsetia insularum (Jordan and Evermann).

One from Lisiansky, 105 mm. long, May 19.

MUGILIDAE

Mugil cephalus Linné.

Adult at Laysan 483 mm. in April. Three from Lisiansky and 3 from Ocean Island in May, in the Querimana stage, 27 to 32 mm., two from

French Frigate Shoals in June. Few seen at Laysan but abundant at Lisiansky. Many were over 600 mm. long.

Neomyxus chaptalii (Eydoux and Souleyet).

One from French Frigate Shoals, one from Laysan and five from Johnston Island, 53 to 337 mm.

Few at Laysan Island, abundant at Lisiansky, whence one 245 mm. was taken.

SPHYRAENIDAE

Sphyraena japonica Valenciennes.

Three from Johnston Island 448 to 550 mm. Scales 122 in lateral line to caudal base. Two gilt longitudinal lines on sides, very characteristic of the species.

In his account of *Sphyraena japonica* Schlegel does not mention gilt longitudinal lines, though the spinous dorsal is said to be well behind the pectoral tip. Weber says "origin of first dorsal behind tip of pectorals and before origin of ventrals," though our specimen has ventral origin before spinous-dorsal origin.

POLYNEMIDAE

Polydactylus sexfilis (Valenciennes).

Fifteen from Laysan April 20, 155 to 225 mm., where common. One from Lisiansky where abundant. Many 375 mm. long were taken. One from French Frigate Shoals in June.

SCOMBRIDAE

Euthynnus alletteratus (Rafinesque).

One caught by a sailor one mile off Laysan, cut up for bait. A portion preserved.

CENTROLOPHIDAE

Psenes arafurensis Günther.

One in very poor condition, found partly dried beside a nest of *Anous stolidus* on Gardner Island, May 22. Length 68 mm. It appears to be the incompletely described *Psenes arafurensis*, based on an example but 38 mm. long. Günther describes the color as "silvery, with some obscure cross-bands, which extend over and are more distinct on the anal fin. Ventrals black in basal and terminal two-thirds." The obscure cross-bands are not present in our specimen. The species is of interest as an addition to the fauna of Oceania.

CARANGIDAE

Scomberoides sancti-petri (Cuvier).

Two from Johnston Island 400 to 663 mm.; depth 4 1/3.

Naucrates ductor (Linné).

One on the beach at Laysan, in April, 77 mm. long. Washed ashore during storm.

Decapterus sanctae-helenae (Cuvier).

One example 342 (?) mm., partly digested from *Sula cyanops* taken at Lisiansky, May 19. Commonly fed to the young of these birds.

One from Johnston Island, 273 mm.

The later *Caranx pinnulatus* Eydoux and Souleyet is evidently synonymous, as our recent examination of materials shows.

Caranx mate Cuvier.

One from Midway Island, April 15, 61 mm. long. Scutes in straight section of lateral line 37.

Caranx ascensionis (Osbeck).

One from French Frigate Shoals and four from Johnston Island. One of the Johnston Island specimens has body with black dots sprinkled over back and side of head. Another has head and fins all very dark or dusky-black. Length 378 to 550 mm.

Caranx cheilio (Snyder).

One from west reef at Laysan, May 9. Length 610 mm. Common at Laysan in reef channels. Dark opercular spot distinct.

Caranx dasson Jordan and Snyder.

One from Johnston Island and one from French Frigate Shoals, 500 to 530 mm. No opercular spot.

Caranx sexfasciatus Quoy and Gaimard.

Common at Laysan, though none saved.

Carangoides ferdau (Forskål).

One from Wake Island, 398 mm.

Carangoides gymnostethoides Bleeker.

Head 3 1/3; depth 2 2/3; soft dorsal 1, 33; A. II-1, 28; snout 3 1/10 in head measured from upper jaw tip; eye 4¾; maxillary 2 4/5; interorbital 2¾. Gill-rakers 6+18. Scutes 42 straight section of lateral line,

of which 27 enlarged and bony; straight section 7/8 of curved section. Pectoral 2 3/5 in body to caudal base. No dark blotch on opercle. Length 415 mm.

One, described above, and one 320 mm. from Laysan in April, where common in channels of the reef and in water 23 fathoms deep one mile off shore.

Carangoides ajax Snyder.

One at Laysan, not saved.

CHEILODIPTERIDAE

Amia bandanensis (Bleeker).

One from Wake Island in July, 62 mm.

Amia frenata (Valenciennes).

Six from Johnston Island in July, 97 to 125 mm. Three from French Frigate Shoals, 153 mm.

Amia doryssa Jordan and Seale.

One from Wake Island, 44 mm.

Apogonichthys auritus (Valenciennes).

Five from Wake Island in July, 44 to 62 mm.

Apogonichthys isostigma Jordan and Seale, is a later synonym, our specimens agreeing in every way.

Synagrops japonica (Steindachner and Döderlein).

One from Lahaina, Maui, in June, 32 mm.

KUHLIIDAE

Kuhlia sandvicensis (Steindachner).

Five from Nihoa, six from French Frigate Shoals, 22 from Laysan, five from Lisiansky, one from Pearl and Hermes, one from Necker, one from Johnston Island, and two from Wake Island. Length 24 to 290 mm.

Common at Laysan, abundant at Lisiansky. Feeds over shallow parts of the reef.

SERRANIDAE

Variola louti (Forskål).

One from Wake Island, 490 mm. Pectoral and hind caudal edges yellow.

Cephalopholis argus Schneider.

One from Wake Island, 198 mm.

Cephalopholis sonnerati (Valenciennes).

One from Wake Island, 160 mm. Agrees in many ways with Day's figure of *Serranus sonnerati*, except the head shows fine dark spots and not reticulations.

Serranus corallicola Valenciennes.

Two from Wake Island in July, 136 to 250 mm. Pectoral spotted as in Bleeker's figure of *Epinephelus altivelioides*.

Serranus fasciatus (Forskål).

One from Wake Island, 268 mm. Color in alcohol pale brown on back, to whitish below. Across back above 6 deeper brown bands, of which 3 on predorsal. Dorsals yellowish-white, membranes of spinous fin marginally broadly blackish, also blackish basal streak to same fin. Other fins all pale yellowish. Lower hind border of orbit narrowly blackish.

Serranus quernus (Seale).

One from Laysan, May 9, 400 mm. long.

Serranus merra (Bloch).

Two from Wake Island, 223 mm.

PRIACANTHIDAE

Priacanthus hamrur (Forskål).

Five from French Frigate Shoals, 290 mm.

LUTJANIDAE

Pristipomoides sieboldii (Bleeker).

One from Johnston Island, 475 mm.

Lutjanus marginatus (Cuvier).

Two from Wake Island, 245 mm.

Lutjanus monostigma (Cuvier).

One from Wake Island, 258 mm.

LETHRINIDAE

Lethrinus mahsena (Forskål).

One from Wake Island, 462 mm.

SPARIDAE

Monotaxis grandoculis (Forskål).

One from Wake Island, 305 mm.

KYPHOSIDAE

Kyphosus fuscus (Lacépède).

Two from Necker Island, 122 to 136 mm. Both with low light silvery horizontal line close below eye. Two from Laysan in April, 470 mm., and one from Lisiansky in May, 185 mm. Common at Laysan, abundant at Lisiansky. Five from Johnston 255 to 320 mm.

This species feeds chiefly upon marine algae procured from the reef. The specimens seen at Gardner Island were entirely yellow. Owing to their small mouths it is difficult to catch them with a hook, but they are easily procured with a cast net.

GREGORYINIDAE

Gregoryina gygis Fowler and Ball.

Gregoryina gygis Fowler and Ball. Acad. Nat. Sci. Phila. Proc. p. 270, 1924. Only the type known, No. 3415, Bishop Museum.

MULLIDAE

Mulloides auriflamma (Forskål).

Five from French Frigate Shoals and 4 from Johnston Island, 110 to 235 mm. Gill-rakers 5 to 9+20 to 22.

Mulloides samoensis Günther.

One specimen, 368 mm. from Laysan, in May, where rare. It shows: head 3 3/5; depth, 3¾; D. VIII-I, 8, 1; A. II, 6, 1; scales 34 in lateral line to caudal base and 2 more on latter; snout 2 in head; eye 4¾; maxillary 3 1/8; interorbital 3; gill-rakers 8+18.

Five from Lisiansky, 145 to 285 mm., May 16, where common.

Upeneus chryserydros (Lacépède).

One from Johnston Island, 438 mm., one from Wake Island, 330 mm.

Upeneus multifasciatus (Quoy and Gaimard).

Two from French Frigate Shoals, 198 to 260 mm., one from shore-reef at Laysan, May 4, 285 mm. Uncommon at Laysan; common at Lisiansky in shallow water on the reef.

Upeneus porphyreus (Jenkins).

Two from Pearl and Hermes Reef, May 17, are 60 mm. long. Eye contained 3 2/5 to 3 7/8 in head. Barbells short, 1¾ in head. In alcohol back slaty-gray, sides and below whitish. Dorsals grayish, caudal brownish terminally, other fins whitish.

Also two, same size as above, from west reef of Laysan and two specimens 30 and 32 mm. at Lisiansky, May 19.

Upeneus pleurostigma (Bennett).

One 280 mm. from west reef at Laysan, May 25, where uncommon. Common at Lisiansky.

Upeneus indicus (Shaw).

One from Wake Island, 273 mm.

Upeneus barberinus (Lacépède).

One from Johnston Island, 365 mm. Agrees with Bleeker's colored figure in showing dark streak from eye inclined slightly above lateral line posteriorly or below soft dorsal. The specimen has the barbels asymmetrical; left one reaches far as opposite hind eye edge; right one three-fourths length of left one.

CIRRHITIDAE

Paracirrhites forsteri (Schneider).

One, 48 mm. from Ocean Island in May. Color in alcohol with dusky to blackish band from snout to upper half of caudal base and down on middle of median rays basally. Head above with scattered deeper or blackish bands. Lower half of body, including fins brilliant white.

Several seen about coral heads at Laysan.

Paracirrhites arcatus (Cuvier).

One from Ocean Island, 47 mm. long.

Paracirrhites melanotus (Günther).

Four from Wake Island, in July, 33 to 50 mm.

Cirrhitus marmoratus (Lacépède).

One from shore-reef at Laysan, in May, 168 mm. Though five seen at Laysan, only one caught. Frequents outer edge of shore-reef.

One in poor condition from Nihoa, in June, 198 mm.; one from Necker, in June, 180 mm.; two from Johnston Island, in July, 97 mm. and 210 mm.

Cirrhitus maculatus Lacépède.

One from Johnston Island and two from Wake Island, 98 to 238 mm.

CHAETODONTIDAE

Forcipiger longirostris (Broussonet).

Two from Wake Island, 170 mm. Pectoral reaches opposite bend at straight section of lateral line.

Chaetodon setifer Bloch.

One from French Frigate Shoals, five from Johnston and four from Wake island, 102 to 225 mm.

Chaetodon semeion Bleeker.

Two from Wake Island, 190 mm. Color when fresh bright orange-yellow. Margin of soft dorsal and ends of ventral bright yellow. Soft dorsal with submarginal dusky line, anal likewise and then both with band of white next to band of yellow, last adjoining black basal area of both fins. Caudal grayish, upper and lower edges orange.

Chaetodon lunula Lacépède.

Three from Wake Island, 170 to 172 mm.

Chaetodon unimaculatus Bloch.

Six from Johnston Island, 91 to 113 mm.

Chaetodon ornatissimus Cuvier.

Three from Johnston Island and several from Wake Island, 135 to 175 mm.

Chaetodon punctato-fasciatus Valenciennes.

Three from Johnston Island, 105 mm.

Chaetodon fremblii Bennett.

Five from French Frigate Shoals, 105 to 160 mm. One from west reef at Laysan, May 3. Common at Laysan.

Chaetodon trifasciatus Mungo Park.

Five from Johnston Island, 104 to 320 mm.

Chaetodon miliaris Quoy and Gaimard.

Two from Laysan shore reef and four from French Frigate Shoals, 92 to 148 mm. Uncommon.

Chaetodon quadrimaculatus Gray.

Three from Johnston Island and two from Wake Island, 103 to 135 mm.

Chaetodon ephippium Cuvier.

One from Johnston Island and six from Wake Island, 20 to 166 mm.

Chaetodon collaris Bloch.

One from Wake Island, 150 mm.

Chaetodon falcula Bloch.

Six from Wake Island in July, 91 to 173 mm. Two dark bands on back separated on dorsal fins.

Tholichthys sp. (?)

One from off Lisiansky and five from Pearl and Hermes reef, in May, 35 or 36 mm. long.

Holacanthus potteri Jordan and Metz.

One from French Frigate Shoals, 118 mm.

Holacanthus loriculus Günther.

One from Johnston Island in July, 93 mm.

Holacanthus flavissimus Cuvier.

One from Wake Island in July, 98 mm. Agrees in every way with Günther's figure of *Holacanthus luteolus*.

ZANCLIDAE

Zanclus canescens (Linné).

Two from Johnston Island, 155 mm. Two from French Frigate Shoals. Four from Laysan, adults, May 15. About 30 seen at Laysan. Several pairs were observed swimming in circles several feet in diameter. Often associated with *Hepatus sandvicensis, H. atramentatus* and *Abudefduf abdominalis* in shallow reef pools.

ACANTHURIDAE

Hepatus achilles (Shaw).

Five from French Frigate Shoals, three from Johnston Island and two from Wake Island, 143 to 235 mm.

Hepatus olivaceus (Bloch and Schneider).

One from Johnston Island, July, 123 mm.

Hepatus nigricans (Linné).

Three from Johnston and one from Wake Island, 305 to 323 mm.

Hepatus elongatus (Lacépède).

Six from Wake Island, 50 to 55 mm., obtained in July.

Hepatus lineolatus (Valenciennes).

Four from Laysan, one from French Frigate Shoals and five from Johnston Island, 123 to 375 mm.

Hepatus thompsoni Fowler.

Two from Wake Island, 205 mm.

Hepatus guttatus (Schneider).

Three from Wake Island, 223 mm.

Hepatus atramentatus Jordan and Evermann.

Four adults from Laysan in May, where common in association with *H. sandvicensis, Zanclus canescens* and *Abudefduf abdominalis.*

Hepatus sandvicensis (Streets).

Several from Laysan in May, 230 mm. Abundant at Laysan and Lisiansky. Seven from Johnston Island, 32 to 122 mm. These with black line down from before pectoral base.

Six from Wake Island in July, 33 to 40 mm. All with at least dark spot, sometimes dark bar, below pectoral origin.

One each from French Frigate, Lisiansky and Necker, June.

Ctenochaetus strigosus (Bennett).

Two from Laysan, seven from French Frigate Shoals, one from Johnston Island and two from Wake Island, 96 to 250 mm.

Zebrasoma flavescens (Bennett).

Three from Johnston Island, 95 to 180 mm.

Acanthurus lituratus Schneider.

Four from Johnston Island and one from Wake Island, 264 to 510 mm. long inclusive of upper caudal filament.

SCORPAENIDAE

Sebastapistes ballieui (Sauvage).

One 48 mm. from Pearl and Hermes Reef, May 19. This genus inhabits cavities of coral heads. Specimens were obtained by breaking up the coral.

Sebastapistes corallicola Jenkins.

Eleven 27 to 50 mm. from Pearl and Hermes Reef, in May; seven 24 to 54 mm. from Ocean Island, in May; one, 36 mm. from Laysan reef, May 5.

Sebastapistes asperella (Bennett).

One from Laysan reef May 5, one from French Frigate Shoals in July, twelve from Pearl and Hermes in May, seven from Ocean Island in May, three from Wake Island in July, 24 to 54 mm.

Sebastapistes coniorta Jenkins.

Five, 36 to 58 mm., from Pearl and Hermes Reef, May 19.

Sebastapistes albobrunneus (Günther).

Five from Pearl and Hermes May 19, 36 to 58 mm.

CARACANTHIDAE

Caracanthus maculatus (Gray).

Sixteen from Pearl and Hermes and two from Ocean Island in May, 35 to 48 mm.

Caracanthus unipinna (Gray).

Three from Wake Island in July, 24 to 26 mm. All have dorsal fully connected or without notch and are uniform brown, at least without any spots, though lower surface a little paler.

POMACENTRIDAE

Dascyllus aruanus (Linné).

Nineteen from Wake Island in July, 18 to 45 mm.

Chromis caeruleus (Cuvier).

Twelve from Wake Island, 20 to 52 mm.

Chromis dimidiatus (Klunzinger).

One from Johnston Island and three from Wake Island in July, 60 to 90 mm. Also one from French Frigate Shoals in July, 68 mm. These examples have the caudal elongate and ending in filaments, thus the caudal fin nearly long as trunk without the head. Also hind edge of gill-opening blackish. They agree with Günther's figure of *Heliastes dimidiatus* except that the pectoral base is not shown as black, though the description says *"Bais der Brustflosse schwarz."*

Both *Chromis leucurus* Gilbert and *Chromis iomelas* Jordan and Seale are unnecessary synonyms.

Pomacentrus nigricans (Lacépède).

From Wake Island 23 specimens, 31 to 88 mm. One shows only hind

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preopercle edge serrate, its lower edge and that of suborbital entire. It also has larger blue suborbital line and large bluish spots on cheek and opercle.

Two from west reef of Laysan May 23, 72 to 124 mm. Common at Laysan.

Abudefduf sordidus (Forskål).

One from Nihoa in June, one from Necker, nine from Laysan in May, one from Lisiansky, eight from Johnston Island and two from Wake Island, 48 to 255 mm. Common at Laysan and Lisiansky.

Abudefduf abdominalis (Quoy and Gaimard).

Eleven from Laysan in May, 103 to 250 mm. Common at Laysan and few seen at Lisiansky, in both shallow water and deeper channels of reef.

Abudefduf septemfasciatus (Cuvier).

Two from Wake Island, 128 mm.

Abudefduf zonatus (Cuvier).

Four from Wake Island in July, 70 to 72 mm. None show any white transverse band on back.

Abudefduf leucopomus (Cuvier).

From Wake Island 28 specimens 17 to 60 mm. One of larger specimens has blue band from above eye discontinued or obsolete on back after head.

Abudefduf imparipennis (Vaillant and Sauvage).

Four from Johnston Island and ten from Wake Island, 26 to 51 mm. Of those from Johnston back olive, lower half of body, including caudal, pale yellowish. No dark spots on head, trunk or fins. Some small azure spots on cheek and row close along lower eye edge. Two of the Wake Island specimens have a black blotch at bases of last dorsal rays.

Abudefduf brownriggii (J. W. Bennett).

Six from Wake Island, 22 to 47 mm. The two small ones show D. XII, 13 or 14 and A. II, 13. Blue line close along lower border of eye. No black spots on head or body, which uniform brownish, though one at hind edge of soft dorsal basally. Both specimens in very poor preservation. Though they greatly resemble *Abudefduf imparipennis* in the blue line on the side of the snout to the eye, also the dark vertical band across the iris, the presence of the dark spot at the base of the dorsal posteriorly suggests their identity with the present species.

Abudefduf amabilis (De Vis).

One from Wake Island 30 mm. long, in July. Dusky, with 4 white vertical lines, Caudal white. Large black ocellus at front of soft dorsal basally.

Abudefduf melas (Valenciennes).

Three from French Frigate Shoals, 132 mm. Abundant in the Honolulu markets.

Abudefduf albofasciatus (Hombron and Jacquinot).

Two from Johnston Island, July 1923, 56 to 60 mm.; 15 from Wake Island, July 1923, 29 to 68 mm. The Johnston Island examples from the *Whippoorwill*.

Plectroglyphidodon johnstonianus Fowler and Ball.

Plectroglyphidodon johnstonianus Fowler and Ball. Acad. Nat. Sci. Phila. Proc. p. 271. 1924. Only the type, No. 3418, Bishop Museum, from Johnston Island.

LABRIDAE

Lepidaplois hirsutus (Lacépède).

One from French Frigate Shoals, one from Gardner, two from Laysan, 325 to 407 mm.

Lepidaplois modestus (Garrett).

One from French Frigate Shoals, 394 mm. Largely dark rose-purple.

One from Laysan in 10 fathoms, 446 mm. long. Wine-red on body, which quickly changes to light blue. Seen only outside the reef.

Stethojulis axillaris (Quoy and Gaimard).

Three from Lisiansky, 112 to 120 mm. Yellow spot at pectoral base. Taken in 20 fathoms outside the reef.

Halichoeres trimaculatus (Quoy and Gaimard).

Two from Wake Island in July, 47 to 53 mm.

Halichoeres ornatissimus (Garrett).

One from Pearl and Hermes Reef in May, 29 mm. More or less uniformly pale greenish.

Two from Johnston Island in July, 98 to 110 mm.

Coris aygula (Lacépède).

Two from Wake Island, 425 mm. Light green. Dark green band behind pectoral. Now uniform blackish in alcohol, hind pectoral edge dusky-gray.

Coris flavovittata (Bennett).

Two seen at outermost edge of Laysan reef.

Coris lepomis Jenkins.

Five from French Frigate Shoals, 305 to 400 mm.

Coris multicolor (Rüppell).

One from shore-reef at Laysan May 3, 162 mm.

Julis eydouxii Cuvier and Valenciennes.

One from Necker in June, 155 mm.

Gomphosus varius Lacépède.

One from French Frigate Shoals, 137 mm. Seen at Laysan.

Gomphosus tricolor Quoy and Gaimard.

Two from Johnston Island, 280 mm.

Epibulus insidiator (Pallas).

Two from Johnston Island, 280 mm.

Anampses cuvier Quoy and Gaimard.

One from French Frigate Shoals, 225 mm. Several seen at Laysan near outer edge of reef.

Thalassoma purpureum (Forskål).

Five from Laysan in April, 318 and 355 mm. Smaller differs in rounded caudal, though faded color agrees with larger usual example. Common at

Laysan and Lisiansky, seldom outside the reef.

One from Necker, one from Johnston and one from Wake islands, 78 to 380 mm.

Thalassoma duperrey (Quoy and Gaimard).

Four from Laysan, 180 and 213 mm., May 3, where abundant. One from French Frigate Shoals, one from Necker and two from Lisiansky.

One 25 mm. long, in poor condition from Pearl and Hermes Reef. Black lateral band from side of snout to middle of caudal where it ends in a black spot.

Smaller specimens near beach, larger ones in deeper pools and channels.

Thalassoma ballieui (Vaillant and Sauvage).

One from French Frigate Shoals and one from Johnston Island, 187 to 215 mm.

Two from Laysan and three from Gardner, 380 to 475 mm. Common in reef pools.

Thalassoma umbrostigma (Rüppell).

Three from Wake Island, 58 to 177 mm. One from Necker. Three from Laysan and three from Lisiansky, in May, 80 to 184 mm., abundant on the reef and occasional outside. An active species which pursues crabs into surf on beach.

Thalassoma aneitense (Günther).

One from Johnston Island, 255 mm.

Thalassoma güntheri (Bleeker).

One from French Frigate Shoals, and 17 from Wake Island, 46 to 126 mm. Agrees largely with Günther's figure of *Julis güntheri*. The head is now slaty. Outer 2/5 of pectoral dark gray. Caudal largely yellowish-white, with upper and lower borders gray. Black spot at front of spinous dorsal medianly, and middle of both dorsals longitudinally with broad pale band.

Pseudocheilinus hexataenia (Bleeker).

Six from Johnston Island and one from Wake Island, 23 to 93 mm.

Generally olivaceous, becoming tawny-olive on lower surface of head anteriorly and mandible. Along back longitudinally till level with eye, 5 narrow blue lines, each margined with blue-black line. Several of these begin narrowly on snout. Along lower half of body 3 obsolete pale longitudinal lines, not margined with darker. From below eye azure-blue line down across lower side of head and pectoral base till opposite and close to depressed ventral. Following ventral median azure-blue line starts and continues to anal, forking around anal as bright median longitudinal azure line its whole length. Dorsals with two grayish longitudinal lines, spines green, and membranes orange, rays more neutral-gray and membranes terminally bluish. Pectoral grayish. Ventral blue.

A smaller example differs in having front half of trunk abruptly dull yellow, the dark blue longitudinal and other lines replaced by bright orange lines. Eye with oblique green band wide as pupil, bordered above and below with pink line. Both these notes from Johnston Island specimens.

A very variable species, especially as preserved in alcohol or formalin and recently redescribed as *Pseudocheilinus octotaenia* by Jenkins and *Pseudocheilinus evanidus* by Jordan and Evermann.

Cheilinus digrammus (Lacépède).

One from Johnston Island 265 mm. and one from Wake Island, 217 mm.

Cheilinus unifasciatus Streets.

One from French Frigate Shoals, 162 mm.

Cheilinus undulatus Rüppell.

Five from Wake Island, one of which 493 mm.

Novaculichthys taeniourus (Lacépède).

One from Wake Island, 250 mm.

CALLYODONTIDAE

Callyodon miniatus (Jenkins).

Head 3; depth 2 2/3; D. IX, 10, 1; A. III, 9, 1; scales 18 in upper section of lateral line and 6 in lower section to caudal base, with 2 more on latter; 2 scales above lateral line, 6 below; 3 predorsal scales; snout (to end of teeth) 2¼ in head; eye 6⅛; maxillary 4; interorbital 3. No posterior canines. Scales on cheek in 2 rows, 4 in upper (+ 1 postocular) and 2 in lower. Each tube of lateral line with one to 4 fine branchlets. Caudal rounded, length 1½ in head; pectoral 1 2/5; ventral 1 4/5.

Color in alcohol variegated dull purplish-brown, little paler on lower surface of abdomen. Fins with more or less brownish, especially caudal and anal, with outer portions largely white. Pectoral brownish, especially basally, lower rays pale. When fresh red especially on tail. Length 262 mm.

One described above, and two others, 195 and 215 mm. from Lisiansky, May 12. Common at Laysan and Lisiansky in channels at outer edge of reef. Browses on living coral.

Callyodon perspicillatus (Steindachner).

Two from Lisiansky, May 17, 295 to 347 mm. Base color blue-purple, faded brown in alcohol. Common at Laysan and Lisiansky. Associated with *C. miniatus*.

One from French Frigate Shoals, 414 mm. and four from Johnston Island 255 to 375 mm.

Callyodon borborus (Jordan and Evermann).

Three from Wake Island in July, 86 to 101 mm.

Callyodon brunneus (Jenkins).

One from Wake Island, 305 mm.

Callyodon ahula (Jenkins).

One from French Frigate Shoals and two from Johnston Island, 384 to 426 mm.

Callyodon rubroviolaceus (Steindachner).

Two from Wake Island in July, 493 mm.

Callyodon jonesi (Streets).

One from Wake Island, 610 mm.

Callyodon pectoralis (Valenciennes).

Two from Wake Island, 493 mm.

Callyodon sordidus (Forskål).

Two from Johnston Island and one from Wake Island, 250 to 359 mm.

Callyodon erythrodon (Valenciennes).

One from French Frigate Shoals, four from Johnston Island and one from Wake Island, 80 to 210 mm.

Callyodon tricolor (Bleeker).

Two from Wake Island, 320 to 376 mm.

Callyodon sp. (?)

Jaws of large example, 45 mm. wide, white in color, taken from the stomach of a shark off Laysan Island.

ELEOTRIDAE

Eleotris fusca (Schneider).

One from Palmyra Island in 1913, through C. Montague Cooke. Length 20 mm.

Asterropterix semipunctatus Rüppell.

One, in poor condition, from Pearl and Hermes Reef in May, 20 mm.

Eviota viridis (Waite).

Five from French Frigate Shoals in June, four from Laysan in May, two from Ocean Island in May, three from Johnston Island in July, and eight from Wake Island in July. Length 11 to 18 mm.

Johnston Island specimens very pale brown above when fresh in alcohol, pale to whitish below. Cheek and upper edge of back with some dark dots. Six obscure dusky transverse cross-bands, only last before caudal with median blackish blotch. Small blackish basal caudal vertical line. Five dusky crossbars on predorsal. Scales on back each with basal cluster of dark dots. Fins all pale.

Eviota epiphanes Jenkins.

Two small ones from Ocean Island and four, 14 to 18 mm., from Laysan, in May.

GOBIIDAE

Bathygobius fuscus (Rüppell).

Four from Nihoa in June, four from Necker Island, two from Lisiansky in May, one from Laysan May 19, four from Johnston Island and one from Wake Island. Length 32 to 86 mm.

Gnatholepis anjerensis (Bleeker).

One from Wake Island in July, 37 mm. Caudal 4¼ in total length. Cheeks scaly. Dark line below eye and across interorbital.

Glossogobius giurus (Buchanan-Hamilton).

One from Wake Island in July, 40 mm.

Gobiodon rivulatus (Rüppell).

Five from Wake Island in July, 22 to 35 mm. All with at least lower canines. No distinct scales. Smallest pale, uniform, apparently yellow in life. Others all brown, paler on belly.

Paragobiodon echinocephalus (Rüppell).

Ten from Wake Island in July, 18 to 21 mm.

Vitraria clarescens Jordan and Evermann.

Two from Lisiansky May 19, three miles off shore at cargo light and four from Pearl and Hermes Reef May 17, 35 to 55 mm.

ECHENEIDAE

Echeneis remora Linné.

Two from Wake Island in July, 78 to 95 mm. D. XVIII. Larger taken from skin of *Eulamia commersonii.*

AMMODYTIDAE

Bleekeria gillii T. H. Bean.

Bleekeria gillii T. H. Bean, U. S. Nat. Mus. Proc. 17, p. 629, 1894.

Head 4; depth 10; D. 46; A. 1, 18; P. 14; scales 100 in lateral line and to caudal base, with 4 more on latter; 3 scales above lateral line, 10 below; 20 (?) predorsal scales; snout 3 2/5 in head, measured from upper jaw tip; eye, 5; maxillary, 3 2/5; interorbital, 6¾.

Body robust, slightly compressed. Caudal peduncle compressed, least depth 2¼ in its length or 4¾ in total head length.

Head width 4 in its length. Snout conic, width about 2⅛ in its length. Eye with hind edge slightly before middle in head length; 1¾ in snout. Mouth large, lower jaw protruding. Maxillary reaches eye, upper portion largely concealed, end slender. No teeth. Nostrils small, well separated, anterior about first third in snout. Interorbital slightly convex. Opercle ends in rather long posterior lobe. Bones of head smooth.

Gill-opening extends forward opposite front pupil edge. Gill-rakers 7+18, lanceolate, slender, equals gill-filaments or 1¼ in eye. Pseudobranchiae half length of gill filaments. Isthmus long, slender, trenchant frenum.

Scales with 13 basal and 15 apical radiating striae; circuli 15. Scales on trunk in oblique series, but without oblique keels on trunk. Lateral line extends high along back, though not quite to caudal base; tubes small, simple, well exposed.

Dorsal origin begins about over that of pectoral; fin depressible in groove its entire length; second ray 4¼ in total head length. Anal inserted nearly midway

between depressed pectoral tip and caudal base; second ray 2 3/5 in head. Caudal little forked, lobes pointed, slender, 1⅞ in head. Pectoral small, pointed, 2¾ in head. No ventral. Vent close before anal.

Color in alcohol pale brownish, whitish below. Sides and under surface of body with subdued silvery tinge. Iris silvery-white. Fins all pale. Last dorsal and anal membranes sprinkled with small dusky dots. Caudal terminally with dusky dots.

Length 84 mm.

No. 3416, Bishop Museum. Pearl and Hermes Reef, May 17, 1923. T. Dranga.

Related closely to *Bleekeria kallolepis* Günther,[4] but differs in the fewer dorsal (40) and anal (15) rays. Day describes the colors with "about five yellowish horizontal bands, which are wide as the ground-color. Dorsal fin with a bluish base and yellow bands; anal with a bluish band along its center; caudal stained gray externally." We are indebted to Prof. Barton A. Bean for the reference to this species, described from eleven examples in the U. S. National Museum, without locality. They were thought to belong to Stimpson's collection from the Pacific, and may possibly therefore have been taken in the Bonin Islands. Besides placing definitely a little-known species in its proper faunal region, the discovery of a representative of this family in Oceania is of interest as extending the range of the Bleekerinae so far into the Pacific and demonstrating its great Indo-Pacific distribution.

BLENNIIDAE

Enneapterygius atriceps (Jenkins).

One example, 29 mm. from Laysan. Upper surface of head rosy in alcohol, lower half black and trunk brown.

Enneapterygius hemimelas (Kner).

One from Laysan. Upper surface of head rosy, lower half black. Trunk brown.

One from French Frigate Shoals in June and three from Wake in July, 16 to 29 mm.

Blennius rhabdotrachelus Fowler and Ball.

Blennius rhabdotrachelus Fowler and Ball, Acad. Nat. Sci. Phila. Proc. p. 272, 1924.

Only the type, No. 3419, Bishop Museum, taken at Wake Island, July 1923.

Rupiscartes striatus (Quoy and Gaimard).

Head 4; depth 4½; D. XII, 15; A. I, 17; snout 2 7/8 in head; eye 5½; mouth width 1 7/8; maxillary 2⅛; interorbital equals eye.

Head width 1¼ in its length. Snout very obtuse, though inclined, not vertical. Fringed tentacle above eye long as eye-diameter. Lower canine each side moderate. Palmate fringed nasal cirrus and similar one each side of occiput. Dorsals deeply notched and soft dorsal united with the caudal peduncle by membrane, but not to caudal; latter rounded.

[4] Gunther, Albert, Catalogue of the fishes of the British Museum, 4, p. 387, 1862.

. Color in alcohol largely neutral-brown above, livid whitish on abdomen. Dark neutral slaty blotch close behind eye and little less than its diameter.

One specimen 126 mm. from Gardner Island, May 22. An interesting addition to the Hawaiian fauna. Well noticed from Easter Island by Kendall and Radcliffe.[5]

Rupiscartes variolosus (Valenciennes).

From Johnston Island 22 in July and 65 from Wake Island in July, 35 to 70 mm.

Rupiscartes marmoratus (Bennett).

Two from Necker Island, one from Laysan in April and one from Wake Island in July, 55 to 145 mm.

Rupiscartes gibbifrons (Quoy and Gaimard).

One from Johnston Island and three from Wake Island, 58 to 70 mm.

Rupiscartes quagga Fowler and Ball.

Rupiscartes quagga Fowler and Ball: Acad. Nat. Sci. Phila. Proc. p. 273. Wake Island, 1924.

Type No. 3420, Bishop Museum. Wake Island, July 1923. Tanager Expedition. Also 30 paratypes, 38 to 68 mm. long.

Salarias zebra Vaillant and Sauvage.

Two from Nihoa in June, 29 from Laysan, four from Necker, one from Lisiansky, 71 to 187 mm. Common at Laysan in tide-pools of sandstone ledge.

Salarias edentulus (Schneider).

Four from Wake Island in July, 59 to 143 mm. No canines. With or without light line from behind upper hind edge of eye horizontally.

Enchelyurus ater (Günther).

Three from Laysan in May and one from Lisiansky. Black. Head with variably dark bars and lines, vertical to inclined. Length 14 to 35 mm.

BALISTIDAE

Balistes vidua Richardson.

Two from French Frigate Shoals, two from Johnston Island, one from Wake Island, 175 to 260 mm.

Balistapus aculeatus (Linné).

Three from Laysan in May and April, one from Johnston Island and three from Wake Island, 200 to 280 mm.

[5] Mus. Comp. Zool., Mem. 35, No. 3, p 154, 1912.

Melichthys buniva (Lacépède).

Three from French Frigate Shoals, one from Gardner Island, one from Necker Island, three from Johnston Island, two from Wake Island, seven from Laysan where common in deep pools and channels, 160 to 335 mm.

MONACANTHIDAE

Monacanthus spilosomus Lay and Bennett.

One from Necker Island, 184 mm.

Monacanthus sandwichiensis (Quoy and Gaimard).

One from Johnston Island, 280 mm.

Monacanthus melanocephalus Bleeker.

Four from Johnston Island, 75 to 122 mm.

OSTRACIIDAE

Ostracion sebae Bleeker.

Two from Wake Island, 160 mm. On under surface of carapace only few golden spots around margins.

One from Necker in June and one from Laysan Island, 30 to 42 mm.

Ostracion lentiginosus Schneider.

Three from Johnston Island and three from Wake Island, 115 to 165 mm. Former spots all pale blue in alcohol, close set, extend over caudal basally, also dorsal and some vermiculate blue lines on under surface of carapace.

Ostracion diaphanus Schneider.

Two from Lisiansky and one from Laysan in May, 12 to 15 mm.

Ostracion solorensis Bleeker.

One from Johnston Island in July, 53 mm. Differs from Bleeker's figure in that the caudal has black spots well over most of fin at least and without any basal black spots. The blue lines from the eye to the caudal peduncle above are separated from the dark spots on the lower side of the carapace by a dull brown area, at least from below eye to hind edge of carapace. There are no dark spots below the eye in our specimen.

TETRODONTIDAE

Tetrodon meleagris Schneider.

Skeleton ashore at Laysan May 12, one from Lisiansky beach May 14, four from Johnston Island and two from Wake Island, 165 to 280 (?) mm.

Tetrodon regani Günther.

One from Wake Island, 250 mm.

CANTHIGASTERIDAE

Canthigaster jactator (Jenkins).

One from west reef at Laysan May 23 and two from French Frigate Shoals in June, 73 to 78 mm.

Canthigaster cinctus (Richardson).

Seventeen from stomach of *Sterna fuliginosa* at Lisiansky in May, 26 to 40 mm.

DIODONTIDAE

Diodon hystrix Linné.

Three from Laysan and one from Wake Island, 130 to 710 mm. In largest from Wake Island, frontal spines all short, 3½ in long ones under depressed pectoral. Body above light chocolate, sides of head grayish, belly white. Back and head above and on sides everywhere with fine numerous dusky round dots, each much smaller than pupil. Fins similarly spotted, edges pale.

Diodon holacanthus Linné.

One from French Frigate Shoals, 180 mm. Frontal spines longer than post-pectoral. Black band across interorbital, another across occiput and three on back.

One 274 mm. from Laysan in May. Frontal spines slightly longer than post-pectoral spines. Black interorbital band present, another before and above gill-opening and large black spot above pectoral, also one on posterior predorsal and another at dorsal origin.

Also one 130 mm. and another 230 mm. on the beach at Laysan.

Chilomycterus affinis Günther.

One washed on beach at Lisiansky, poor, 120(?) mm.

One from Necker or Nihoa, 53 mm. Dry specimen, D. 13, A. 12. Several small spines below the eye.

ANTENNARIIDAE

Antennarius nummifer Cuvier.

Bait slightly longer than dorsal spine, which little less than interorbital space, and ends in cutaneous flap. First dorsal spine robust, terminally free, though bound down basally. Skin finely roughened. Pale brownish, marked or variegated with darker, chiefly above. Length 115 mm.

One found on the beach at Laysan. This specimen had swallowed a Myripristis, which before partial digestion was at least 125 mm. long.